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STUDIES IN STELIS. I.

BY

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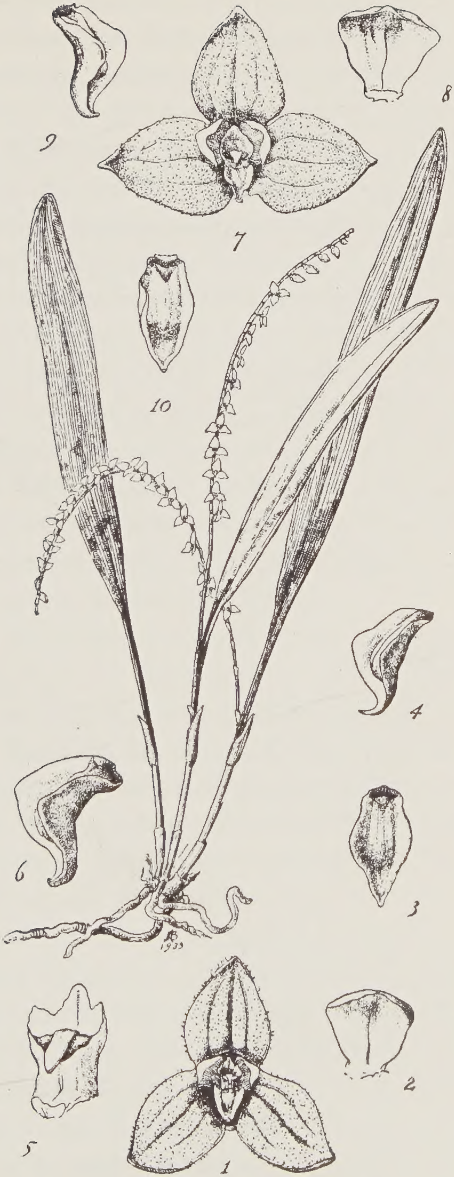
IN PROPOSING a new Stelis of the "Stelis Liebmannii group", it should prove helpful if the allied species of Middle America are compared and clarified. The first species of the group to be recognized was *Stelis Liebmannii*, published as a *nomen nudum* in the Gardeners' Chronicle ser. 2, 12 (1879) 108, and attributed by Hemsley to H. G. Reichenbach. I cannot discover any published description of *Stelis Liebmannii*. The specimen in Reichenbach's herbarium bearing this name is Liebmann's no. 168, collected in August in 1841 near Mirador, Mexico. It is a slender plant, about 14.5 cm. tall, with narrow linear-oblong leaves 6–9 cm. long, with an average width of about 5 mm. The monophyllous secondary stems are very slender, ranging between two and three centimeters in length. The racemes are borne by distinctly flexuous almost filiform peduncles. The diminutive flowers, about twenty in number, on the evidence of dried specimens, appear to have been yellowish, perhaps faintly tinged with purple. The sepals, ovate in outline, are hardly 2 mm. long. The labellum is minute, rather distinctly 3-lobed, with the lateral lobes rounded and erect, and the terminal lobe narrowly triangular-cymbiform, with a sharply upturned acute tip. (The accompanying illustration obviates the necessity of a more detailed description.)

EXPLANATION OF ILLUSTRATION

Stelis rubens *Schltr.* Plant natural size, drawn from Liebmann no. 168. 1, flower about 11 times natural size. 2, petal. 3, labellum, as seen from above. 4, labellum, side view. 5, column, anther removed. 6, labellum, drawn from the type of *S. Tuerckheimii* Schltr., side view. 7, flower from the type of *S. rubens* Schltr. 8, petal. 9, labellum, side view. 10, labellum, as seen from above.

The drawings were made from dried specimens, consequently figs. 3 and 10 differ slightly in the thickening of the disc and in outline from the lip of fresh flowers. It is evident that the analytical drawings made by Dr. Schlechter and preserved in his herbarium at Berlin overemphasize the thickening of the disc and give a misleading impression. Furthermore, as Schlechter's descriptions of *S. rubens* and *S. Tuerckheimii* were based on his drawings they are misleading.

Drawn by Blanche Ames



STELIS *rubens* *Schltr.*

Until 1910, *Stelis Liebmannii* remained the only representative of its alliance in the region north of Panama. In that year Rudolph Schlechter proposed two new species from Guatemala, namely *S. rubens* Schltr. and *S. Tuerckheimii* Schltr. In his notes regarding the affinities of *S. rubens,* Schlechter mentioned *S. gracilis* Ames. It would seem that at this time (the Reichenbachian herbarium was still inaccessible through the terms of Reichenbach's will) Schlechter had not seen anything elucidating *S. Liebmannii,* otherwise he should have cited the Liebmann plant as a close ally of *S. rubens.* It is noteworthy, however, that the comparison of *S. rubens* with *S. gracilis* throws some light on this matter, because while in floral characters these species are not at all similar, they are in their slender habit with filiform rachis and tiny flowers very much alike and through their slenderness quite distinct from the Costa Rican species of the alliance about to be noticed below.

Why Schlechter should have regarded as a new species the plant he described as *Stelis Tuerckheimii* is difficult to understand when it is compared carefully with *S. rubens.* Perhaps he relied on the color of the flowers; but if he did, it should be emphasized that color is a weak character in Stelis, because in identical plants, the color of the sepals may range from greenish yellow to bronzy-purple, influenced, it would seem, by the intensity of the light to which the flowers are exposed. In my studies of Schlechter's types of *S. rubens* and *S. Tuerckheimii* I have been unable to find substantial differentiating characters that keep them apart. I believe they are conspecific and furthermore I am convinced that they are indistinguishable from *S. Liebmannii.* If my conclusions are justified then it would seem that for the plant which has borne the names *S. Liebmannii* Reichb. f., *S. rubens* Schltr. and *S. Tuerckheimii* Schltr. the name *S. rubens*

EXPLANATION OF ILLUSTRATION

Stelis rubens *Schltr.* var. oxypetala (*Schltr.*) *Ames.* Plant natural size, drawn from no.545 of J.B.Edwards' Honduran collections. 1, a portion of the raceme about twice natural size. 2, column with petals and labellum attached. 3, petal. 4, column and labellum, side view showing the protuberant stigma, the obliquely erect rostellum and the anther. 5, flower much enlarged. 6, pollinia. 7, labellum. All drawn with the aid of the camera lucida from specimens preserved in alcohol.

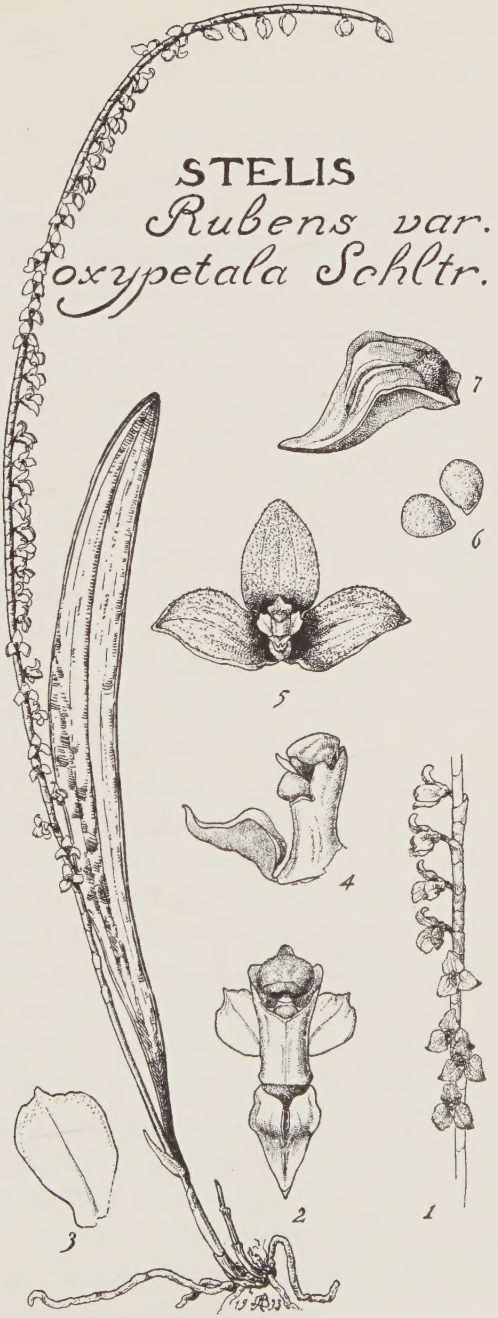
The text cut on page 9 was drawn with the aid of the camera lucida from a flower of Schlechter's type of *S. oxypetala.* 1, labellum, side view. 2, labellum, as seen from above. 3, petal. 4, flower.

Note: The raceme of the specimen illustrated exceeds the leaf. It should be noted that racemes may equal or hardly exceed the leaf. With regard to the form of the labellum reference should be made to the note on page 13.

By an oversight the authority as given on the plate is erroneous and should read (Schltr.) Ames.

Drawn by Blanche Ames

STELIS
Rubens var. oxypetala Schltr.



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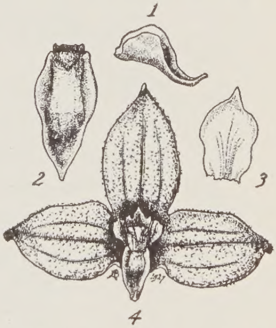
should prevail through the rules that establish valid publication. (Cf. illustrations of the flowers from the type specimens.)

In 1918, Schlechter proposed still another species of the *S. rubens* alliance, naming it *S. oxypetala.* This species was also obtained from Guatemala. Aside from inconsequential differences, the only strong character that separates this species from *S. rubens* is the unusual texture and form of the petals. (Cf. illustration in the text of a flower from the type specimen.)



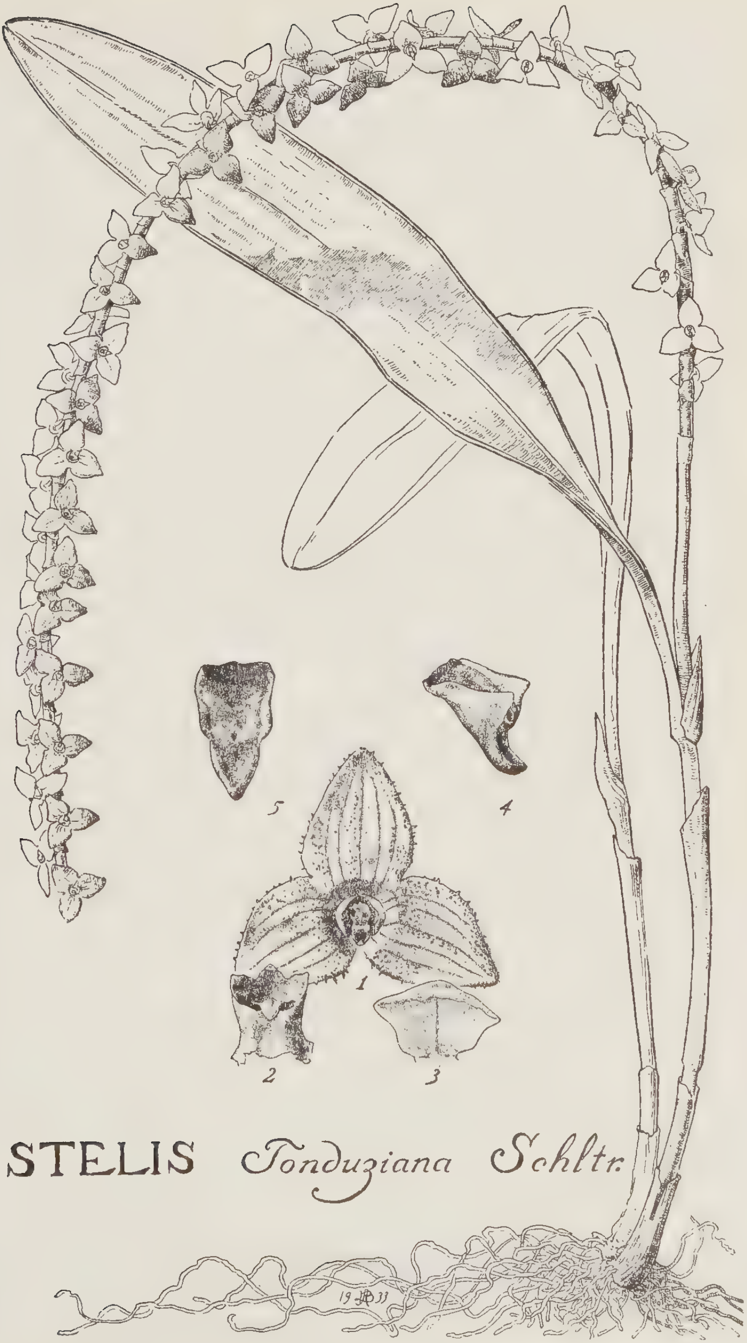
Stelis oxypetala has been a puzzling species chiefly because of its extraordinary rarity. To reduce it to synonomy before exhaustive studies of it could be made, seemed unwise. Recently I received from the Republic of Honduras dried specimens indisputably referable to *S. oxypetala.* These specimens accompanied by flowers preserved in alcohol seemed to constitute evidence showing that *S. oxypetala* might well be a distinct although a weak species. A plate carefully drawn from this material is issued herewith. After the plate was completed, I studied four flowers taken from the dried specimens to compare the perianth organs with the flowers preserved in alcohol. As luck would have it, one of the dried flowers had the characteristic petals of *S. rubens* and made necessary a close examination of every one of the twelve plants constituting Edwards' no. 545. Four of the plants agreed fairly closely with typical *S. rubens*, differing only in having somewhat larger flowers, and petals that proved to be less cuneate in outline and less thickened at the rounded apex. In my opinion *S. oxypetala* is simply a variant of *S. rubens* and should be reduced to varietal rank.

EXPLANATION OF ILLUSTRATION

Stelis Tonduziana *Schltr.* Plant natural size. 1, flower much enlarged. 2, column, anther removed. 3, petal. 4, labellum, side view. 5, labellum, as seen from above.

Figures 1–5 drawn with the aid of the camera lucida from the type.

Drawn by Blanche Ames



STELIS *Tonduziana* *Schltr.*

To one unfamiliar with the variation exhibited by flowers of Stelis and unmindful of the changes that take place in fleshy organs when they are dried for preservation in herbaria, the analytical drawings of the lip of a flower taken from Schlechter's type of *S. oxypetala* may seem to be quite different from the lips of the Honduran plant. With regard to this point it should be borne in mind that dried flowers of the Honduran plants agree almost perfectly with the Guatemalan type. In two flowers taken from the same raceme of Edwards no. 545, one of the lips showed the form exhibited in Schlechter's type of *S. oxypetala*, while the other agreed in every way with the lip represented in the plate of Edwards no. 545.

In Costa Rica there are several species that are closely related to *Stelis rubens* Schltr. They are hardly in the category of geographical varieties. Subtle differences in the structure of the labellum and in the gynostemium serve to distinguish them, although these differences are difficult to describe. The Costa Rican species are stouter and larger-flowered than *S. rubens* and when placed side by side with it are readily separated from it. The first of these Costa Rican species to be described was *Stelis Tonduziana* Schltr. This is the largest flowered species of the group, with the lateral sepals exceeding 4 mm. in length and at least twice larger than the sepals of *S. rubens.* Furthermore, *S. Tonduziana* is characterized very markedly by its 5–nerved sepals. This is the same species as the one described by Schlechter as *S. mirabilis.* In 1924, Paul C. Standley collected several specimens of a remarkable species that I published under the name of *Stelis Standleyi.* The chief difference between this species and *S. Tonduziana* is found in the sepals having three instead of five nerves, although the flowers of the type are considerably smaller, and in this respect easily differentiated.

There is one very remarkable character common to all of these species. I refer to the gynostemium which has the stigmas conspicuously confluent beneath the rostellum and not widely separated on lateral lobes or projections that have their origin as terminal outgrowths. This character is extraordinarily puzzling because it tends to eliminate one of the strongest bits of evidence favoring the separation of Stelis from typical Pleurothallis. Furthermore, in the species of this alliance the stigmas may sometimes protrude forming a globular viscid mass beneath the rostellum, forcing the rostellar process to occupy an obliquely erect position. In the illustration of *Stelis rubens* Schltr. var. *oxypetala* (Schltr.) Ames, this peculiarity is shown in fig. 4.

In 1925, I received several specimens from Costa Rica bearing a strong resemblance to *S. rubens*, but differing from it in the aspect of the labellum, in the stouter vegetative parts and more robust and rigid peduncle. From *Stelis Standleyi* Ames the flowers differ most conspicuously in having the cymbiform apical half of the labellum strongly upcurved. This difference is clearly indicated in the accompanying illustrations. These specimens appear to represent still another species of the *S. rubens* alliance.

Stelis persimilis *Ames, sp. nov.* Herba caespitosa. Caules secundarii erecti vel adscendentes, graciles, monophylli. Folia oblanceolata vel cuneato-spathulata, apice rotundato tridenticulato. Inflorescentiae foliis multo longiores. Racemi dense secundiflori, graciles. Flores atropurpurei. Sepala lateralia elliptico- vel rotundato-ovata, valde glandulosa, trinervia, extus per medium carinata. Sepalum dorsale paulo longius et angustius. Petala rhombica, breviter mucronata. Labellum in circuitu lanceolatum; parte inferiore incrassata cum lobis erectis rotundatis; parte anteriore concava, apice erecto-uncinata. Columna valde abbreviata, apice trilobulato, rostello late triangulo.

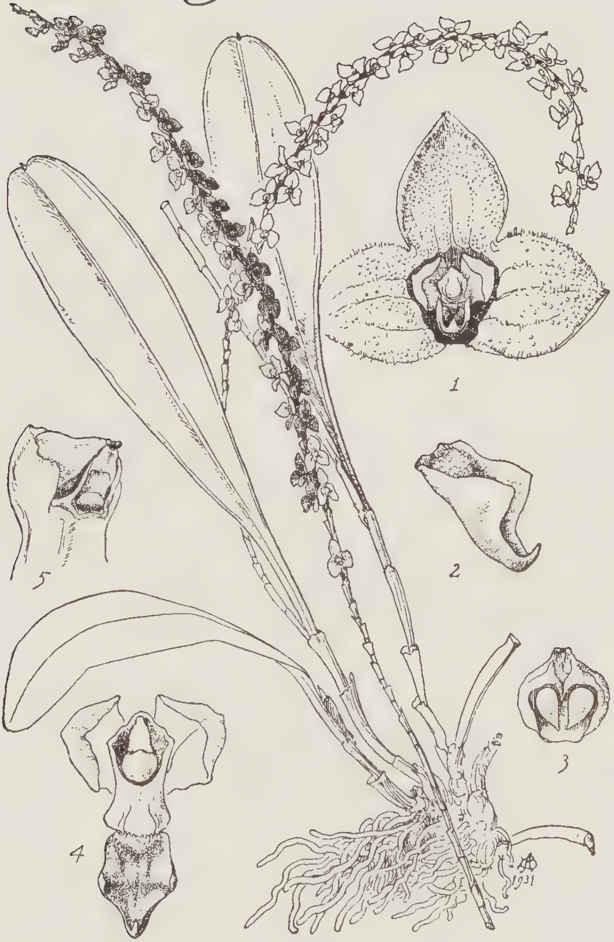
Plant densely caespitose, 8–21 cm. tall including the inflorescence. Roots fibrous, whitish, glabrous. Secondary stems upright or obliquely ascending, monophyllous, up to 7.5 cm. long, entirely or for the most part concealed by tubular imbricating smooth evanescent sheaths. Sheaths up to 33 mm. long. Leaves oblanceolate or cuneate-spatulate, contracted gradually into a slender sulcate petiole; lamina of the leaf 2.6–9.5 cm. long, 10–15.5 mm. wide, distinctly rounded at the tip, the mid-nerve continued into a short apicule; petiole up to 17 mm. long, deeply sulcate. Raceme two to three times longer than the leaf, 8–18 cm. long, about 4 mm. in diameter, erect or slightly arcuate, many-flowered with the flowers maroon, approximate and conspicuously secund. Peduncle below the raceme 1.8–3.8 cm. long, provided with several tubular persistent sheaths. Floral bracts more or less approximate, scarious, infundibuliform, 2.5–3 mm. long. Pedicellate ovary declined, exceeding the bracts. Sepals connate at the base, finely and thickly glandulose on the inner surface, 3-nerved. Lateral sepals round-ovate, obtuse, about 3 mm. long, 2–2.6 mm. wide, with the mid-nerve distinctly carinate on the outer surface and forming an apicule. Dorsal sepal somewhat longer and narrower, ovate, about 3 mm. long, 1.85–2.1 mm. wide, obtuse with a subapical thickening on the dorsal surface. Petals rhombic, sharply angled at the tip, mucronate, 1-nerved, thickened along the upper edge, 1 mm. long, 1 mm. wide. Labellum lanceolate in outline, 1 mm. long; basal half conspicuously thickened with an obliquely erect lobule on each side; apical half triangular, concave, with an upturned more or less acute tip. Column minute, about 1 mm. long, trilobed at the summit with

EXPLANATION OF ILLUSTRATION

Stelis persimilis *Ames.* Plant drawn natural size. 1, flower. 2, labellum, side view. 3, anther and pollinia from ventral side. 4, column (anther removed) with petals and labellum attached (the labellum sharply deflexed): the semi-globular bulging stigma is shown beneath the triangular rostellum. 5, column with the anther in normal position its apex applied to the rostellum. The semi-globular stigma is shown at the base of the rostellum. Figures 1–5 drawn (much enlarged) with the aid of the camera lucida from the type.

Drawn by Blanche Ames

STELIS *persimilis* Ames



the posterior lobe bluntly triangular and with the lateral lobes erect and minutely paucidentate; rostellum triangular-lingulate, becoming erect after removal of the pollinia, about equalling the posterior lobe; stigmas confluent beneath the rostellum. Pollinia two, pyriform.

Costa Rica, Carpintera and San Isidro. Flowers deep maroon. A fairly abundant species. Leaves coriaceous. September, 1925. *C.H.Lankester 1050.* (Type in Herb. Ames No. 31196.): Irazu, La Canada. Flowers purple. At 7,000 feet altitude. September 10, 1925 (flowering under cultivation October 14, 1925). *C.H.Lankester 1070*: Cedral. *A.Alfaro 199*: Laguna de la Chonta, northeast of Santa Maria de Dota, Provincia de San José. On tree. At 2,000–2,100 meters altitude. December 18, 1925. *Paul C. Standley 42305*: Vicinity of Fraijanes, Provincia de Alajuela. On tree. At 1,500–1,700 meters altitude. February 12–13, 1926. *Standley and Rubén Torres R. 47557.*

The following synopsis will serve to present concisely my conception of the group:

1. **Stelis rubens** *Schlechter* in Fedde Repert. 8 (1910) 564.

Stelis Liebmannii Reichenbach filius apud Hemsl. in Gard. Chron. ser. 2, 12 (1879) 108, *nomen*; Hemsl. in Godm. & Salv. Biol. Centr. Am. Bot. 3 (1883) 203, *nomen*; Benth. & Hook.f. Gen. Pl. 3 (1883) 490 in note, *nomen*: Schltr. in Beihefte Bot. Centralbl. 36, Abt. 2 (1918) 445, *nomen.*

Stelis Tuerckheimii Schltr. in Fedde Repert. 8 (1910) 564.

Mexico, State of Vera Cruz, Mirador. August 1841. *G.Liebmann 168*: Zacuapan. August 1906. *C.A.Purpus 2149.*

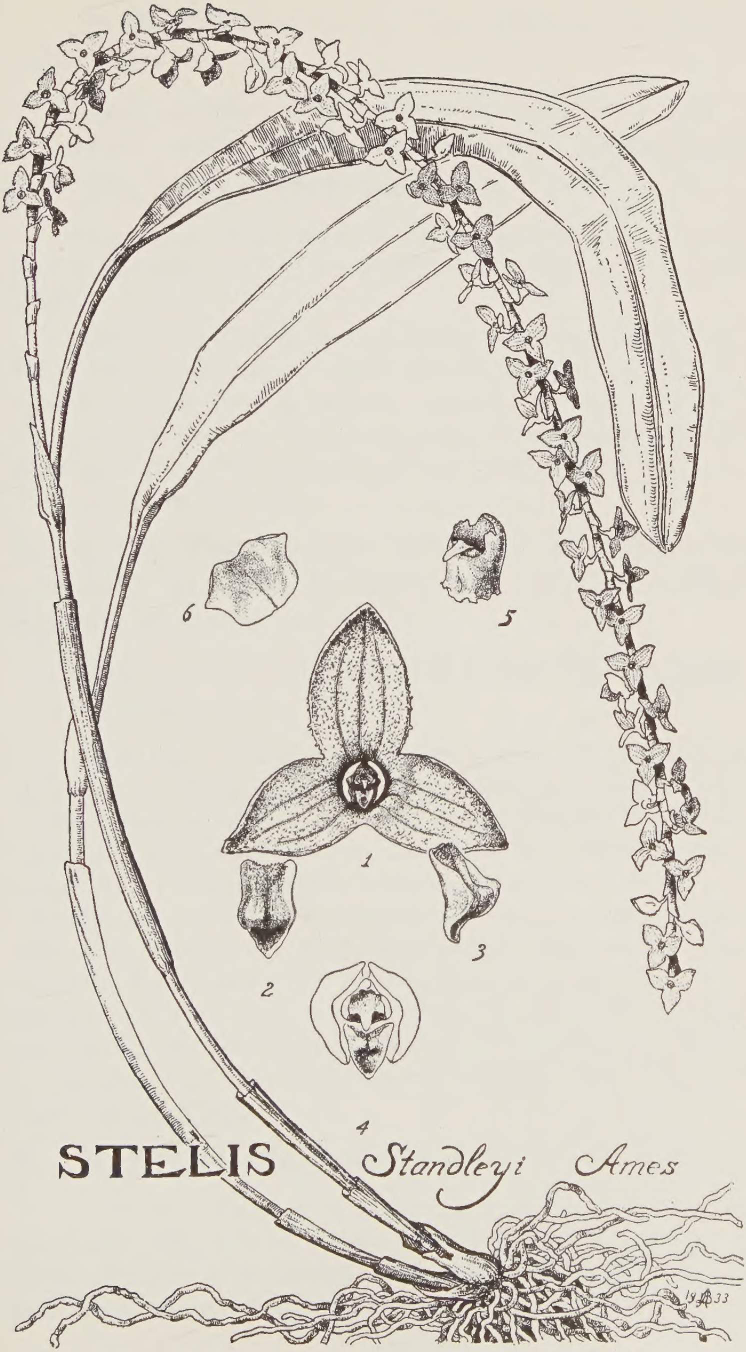
Guatemala, Department of Alta Verapaz, Cubilquitz. At 350 meters altitude. September 1904. *H. von Tuerckheim II. 1061* (Type of *Stelis rubens* Schltr.); At 350 meters altitude. August 1904. *H. von Tuerckheim II.79* (Type of *Stelis Tuerckheimii* Schltr.): Department of Izabal, near Puerto Barrios, about 40 miles from the coast. At 175 feet altitude. September 1930. *Margaret Ward Lewis 5.*

EXPLANATION OF ILLUSTRATION

STELIS STANDLEYI *Ames.* Plant natural size. 1, flower much enlarged. 2, labellum, as seen from above. 3, labellum, side view. 4, column (summit) with petals and labellum attached. 5, column, anther removed. 6, petal.

Figures 1–6 drawn (much enlarged) with the aid of the camera lucida from the type.

Drawn by Blanche Ames



STELIS *Standleyi* Ames

Stelis rubens *Schltr.* var. **oxypetala** (*Schltr.*) *Ames, var. nov.*

> *Stelis oxypetala* Schlechter in Fedde Repert. 15 (Oct. 1918) 203; in Beihefte Bot. Centralbl. 36, Abt. 2 (Nov. 1918) 446.

GUATEMALA, Department of Petén. In silva primaevae prope Faclus. September 1877. *Bernoulli & Cario 624* (Type of *Stelis oxypetala* Schltr.)

REPUBLIC OF HONDURAS, Department of Cortes, Santa Cruz de Yojoa. Epiphyte in open mountain forest at 2,000 feet altitude. Sepals light green with lavender shading. Petals and lip white. September 11, 1933. *J.B.Edwards 545*; From the same locality. Sepals and petals greenish white or white, lip and column white. September 8 and 11, 1933. *J.B.Edwards 543.*

2. Stelis Tonduziana *Schlechter* in Beihefte Bot. Centralbl. 36, Abt. 2 (1918) 393; in Fedde Repert. Beihefte 19 (1923) 20.

> *Stelis mirabilis* Schlechter in Fedde Repert. Beihefte 19 (1923) 96.

COSTA RICA, La Palma. At 2,500 meters altitude. May 1912. *O.Jimenez s.n.* (Type of *Stelis Tonduziana* Schltr.); *Brade 1203* (Type of *Stelis mirabilis* Schltr.); At 1,180 meters altitude. November 18, 1922. *A.M.Brenes 468*: Cedral, Candelaria Sur. Flowers green and purple. At 1,300 meters altitude. November 27, 1925. *A.Alfaro 7*: La Palma de San José. Flowers obliquely secund, vinous purple. May 15, 1925. *C.H.Lankester 977*: Estrella de Cartago. Flowers maroon. January 1923. *C.H.Lankester 397*; Flowers maroon-purple. At 6,500 feet altitude. July 1925. *C.H.Lankester 1035*; At about 1,600 meters altitude. March 17, 1924. *Paul C. Standley 38074*: Province of San José, La Hondura. At 1,300–1,700 meters altitude. March 2–4, 1924. *Paul C. Standley 36414.*

3. Stelis Standleyi *Ames* in Sched. Orch. 9 (1925) 21.

COSTA RICA, Province of Cartago, La Estrella. On tree, flowers dark purple. March 26–27, 1924. *Paul C. Standley 39483, 39386,* and *39419*: Province of San José, La Palma. On mossy tree trunk, flowers dark wine red. At about 1,600 meters altitude. February 3, 1924.

Paul C. Standley 32966: Turialba. Flowers purplish, hyaline. At 350 meters altitude. *A. Alfaro 282*: El Muñeco. At 4,700 feet altitude. June 19, 1928. *H.E. Stork 2723*: La Chonta. May 15, 1928. *Miguel Chacon 1919* (Stork's distribution).

4. Stelis persimilis *Ames*, supra.

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